to obviate the present claims. Applicants therefore urge that the 35 U.S.C. 103 rejection is improper and should be withdrawn.

The undersigned respectfully requests re-examination of this application and believes it is now in condition for allowance. Such action is requested. If the examiner believes there is any matter which prevents allowance of the present application, it is requested that the undersigned be contacted to arrange for an interview which may expedite prosecution.

Respectfully submitted,

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I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office (FAX No. 703-308-7722) on August 2, 2002.

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According to the claims, the electrically resistive composite material is formed by codepositing the electrically non-conductive particulate material and the electrically conductive material onto a substrate by electrodeposition. Such is not taught by Hunt et al.

Indeed, Hunt et al. teaches a resistive material which may comprise a mixture of a conductive metal with a minor amount of a dielectric material. However, the material of Hunt et al. is formed by *chemical vapor deposition*, rather than codeposition via electrodeposition, which is a key feature of thc present invention.

Applicants urge that a *different structure* is obtained by the electrodeposition by the present invention than with the chemical vapor deposition of Hunt. With CVD, the substrate is placed inside a reactor to which a number of gases are supplied. The fundamental principle of the process is that a chemical reaction takes place between the source gases. The product of that reaction is a solid material with condenses on all surfaces inside the reactor. A disadvantage of CVD is that it may result in the formation of different surface thicknesses across a target due to line-of sight effects where it can miss entire sections of the substrate.

In contrast, with electrodeposition, metal *ions* are deposited and the resulting surface is has a *crystalline structure*. When electrodepositing, a substrate is placed in an electrolytic liquid solution. An electrical potential is applied between a conducting area on the substrate, and a counter electrode In the liquid. A chemical redox process takes place resulting in the formation of a layer of material on the substrate and usually some gas generation at the counter electrode. The electrodeposition process results in an even distribution in the bath. Thus, due to the vast differences between CVD and electrodeposition, it is clear that these processes would yield different structures.

Applicants submit that Hunt et al.'s failure to teach an electrically resistive composite material which is formed by electrodeposition, as taught by the present invention, renders the invention patentably distinct from Hunt et al. It is therefore respectfully requested that the 35 U.S.C. 102 rejection be withdrawn.

The examiner has rejected claims 1-5, 21-23, and 27 under 35 U.S.C. 102 over Van Den Broek et al. Applicants respectfully submit that this ground of rejection is improper since Van Den Broek et al. fails to teach every aspect of the presently claimed invention.

Van Den Broek et al. relates to a thin-film resistor and resistance material. However, Applicants submit that Van Den Broek et al., too, fails to teach every aspect of the presently claimed invention. Van Den Broek et al. fails to teach the electrically resistive composite material which is *codeposited* by *electrodeposition*. Rather, this reference teaches a resistance material which is *mixed, heat pressed and sintered* onto a metal substrate. Clearly, this technique greatly differs from the electrodeposition process described above. Applicants urge that the process taught by Van Den Broek et al. results in the formation of a product having a different structure than that produced by Applicants. Attached is a passage from the McGraw-Hill Encyclopedia of Science and Technology, 1982, vol. 8, page 399, where it shows that vapor deposition of metals from coatings by condensation of metal vapor originating from molten metal. In contrast, attached are relevant passages from The Fundamentals of Electrochemistry and Electrodeposition, 1960, Franklin Publishing Company, where it shows that electrodeposition or plating is conducted by a chemical reaction, formation of metallic ions, and a deposition of a crystalline structure. It is submitted that this demonstrates that a different surface topography is obtained by electrodeposition than by vapor deposition or sputtering. It is therefore submitted that Van Den Broek et al.'s failure to teach a product formed by electrodeposition renders the present invention patentably distinct from the cited reference. Thus, Applicants respectfully request that the 35 U.S.C. 102 rejection be withdrawn.

The examiner has rejected claims 6-11, 24-26, and 29 under 35 U.S.C. 103 over Van Den Broek et al. in view of either Clouser, Castonguay et al, or Lindblom et al. The examiner also makes an argument relating to XP-002121182. The examiner asserts that it would have been obvious for one skilled in the art to combine these references to produce the presently claimed invention. Applicants respectfully urge that this is not the case.

The arguments over Van Den Broek et al. are repeated from above and apply equally here. Van Den Broek et al teaches a resistance material which is *mixed, heat pressed and sintered* onto a metal substrate, and it fails to teach an electrically resistive composite material which is *codeposited* by *electrodeposition*. Applicants urge that these very different processes yield *different structures*.

The examiner has previously agreed that XP-002121182 fails to teach a foil conductive filler comprising copper, or a conductive metal layer or multilayer foil. Thus, the examiner cites Castonguay for teaching conductive metal foils. Clouser is cited for teaching conductive fillers made of nickel or copper. Also, Lindblom is cited for teaching the use of Invar having nickel. According to the examiner, it would be obvious for one skilled in the art to formulate the presently claimed invention upon a combined reading of Van Den Broek et al. with any of these references. Applicants urge that this position is unfounded. It is submitted that there is no teaching or suggestion in any of these references that would lead one to combine such references in an effort to devise the present invention. None of these references teach the electrically resistive composite material as taught by the present invention, which is *codeposited* via *electrodeposition*. Clouser employs electrodeposition, but his non-metallic material is <u>not particulate</u>. Clouser employs a *solution* containing *ionizable* acids and salts of nitrogen, phosphorus or sulfur containing compounds. (see col. 10, lines 25-68). The Clouser materials are not selected from the group consisting of silicon carbide, alumina, platinum oxide, tantalum nitride, talc, polyethylene tetrafluoroethylene, and mixtures thereof as required by these claims. Likewise, Castonguay, et al employs electrodeposition, but his non-metallic material is <u>not particulate</u>. Castonguay, et al deposit a solution of nickel, phosphorus and an oxide, hydroxide or peroxide of nickel. No particles are mentioned. Also, the Castonguay, et al materials are not selected from the group consisting of silicon carbide, alumina, platinum oxide, tantalum nitride, talc, polyethylene tetrafluoroethylene, and mixtures thereof as required by these claims. Lindblom, et al employs a *sputtering* process rather than *electrodeposition*. With regard to XP-002121182, boron nitride does not form a part of these claims. Thus, Applicants respectfully submit that one skilled in the art would not be inspired to combined the cited references in an effort to devise the present invention. Furthermore, for the reasons stated above, it is submitted that a combining of Van Den Broek et al. with any or all of these cited references would <u>*still*</u> fail